Kramer Electronics, Ltd.

USER MANUAL

Model:

RC-74DL

Master Room Controller

Contents

1	**Introduction**	**1**
2	**Getting Started**	**1**
3	**Overview**	**1**
4	**Defining the RC-74DL Master Room Controller**	**3**
5	**Connecting the RC-74DL Master Room Controller**	**6**
5.1	Connecting the RS-232 Interface	8
5.2	Connecting the Ethernet Port	8
6	**Grounding the RC-74DL Master Room Controller**	**9**
7	**Operating the RC-74DL Master Room Controller**	**9**
8	**Front Panel Button Caps and Labels**	**10**
8.1	Installing the Front Panel Button Caps, Labels	13
9	**Technical Specifications**	**14**

Figures

Figure 1: RC-74DL Master Room Controller Front Panel 3
Figure 2: RC-74DL Master Room Controller Rear Panel 4
Figure 3: Connecting the RC-74DL Master Room Controller 7
Figure 4: RS-232 Connection 8
Figure 5: Grounding Connection Components 9
Figure 6: Sample Button Label Sheet 12
Figure 7: Button Cap Orientation 13
Figure 8: Button Cap Orientation with Label 13
Figure 9: Placing the Button Cap 13

Tables

Table 1: RC-74DL Master Room Controller Front Panel Features 3
Table 2: RC-74DL Master Room Controller Rear Panel Features 5
Table 3: Grounding Component Descriptions 9
Table 4: RC-74DL Master Room Controller Technical Specifications 14

1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Thank you for purchasing the Kramer **RC-74DL** *Master Room Controller*, which is ideal for controlling multimedia rooms, such as classrooms, auditoriums, conference rooms, and so on, while enabling remote control and management of AV equipment.

Each package includes the following items:

- The **RC-74DL** *Master Room Controller*
- 3 Gang US Installation mud ring
- Power supply and this user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high-performance high-resolution cables[3]

3 Overview

The **RC-74DL** is a highly versatile, 3 gang US, master room controller that acts as an all-in-one extended remote control panel for control of AV equipment—especially projectors and associated equipment—in any room (such as classrooms, boardrooms, or auditoriums). It streamlines operations and simplifies control by integrating audio, video, and computer-video sources into a centralized system.

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from http://www.kramerelectronics.com

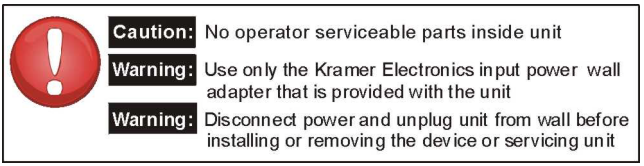
3 The complete list of Kramer cables is on http://www.kramerelectronics.com

The **RC-74DL** *Master Room Controller* features:

- 12 configurable, RGB backlit, front panel buttons in three groups (configured using the **K-Config** configuration software[1])
- 1 configurable rotary up/down controller with direction indicator LEDs (configured using the **K-Config** configuration software)
- 2 general purpose I/O ports that can be configured by **K-Config** as digital inputs, digital outputs or analog inputs for interfacing with a variety of devices such as sensors, switches, LEDs, or relays
- 3 bidirectional RS-232 ports that can control AV equipment such as projectors, LCD and PDP displays, power amplifiers, switchers and scalers
- 4 relay contact closure ports that can control other room items related to the AV system, such as, raising and lowering drapes, a screen or a projector
- IR control on 2 outputs (terminal blocks)
- IR Learning that learns commands from any IR remote
- Compatibility with Kramer **Site-CTRL** software for network remote control and management over the Ethernet port
- 2 **K-NET™** control channels[2] that connect compatible user interfaces and supply power and control data over a single cable
- Flexible control via Ethernet and **K-NET**

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your **RC-74DL** away from moisture, excessive sunlight and dust


Caution:
No operator serviceable parts inside unit
Warning:
Use only the Kramer Electronics input power wall adapter that is provided with the unit
Warning:
Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

1 Available from Kramer Electronics on our Web site at http://www.kramerelectronics.com/support/?soft=k-config

2 K-NET™ is a proprietary Kramer protocol for interconnecting Kramer units

4 Defining the RC-74DL Master Room Controller

Figure 1 and Table 1 define the front panel of the **RC-74DL**.

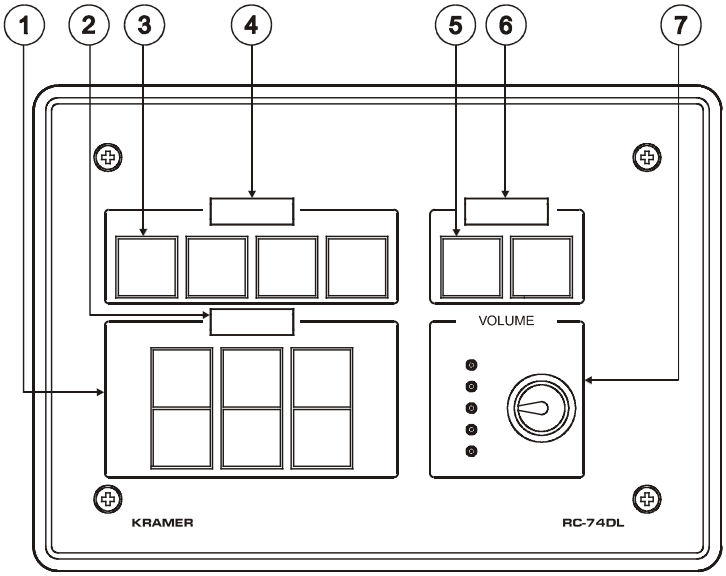


Figure 1: RC-74DL Master Room Controller Front Panel

Table 1: RC-74DL Master Room Controller Front Panel Features

#	Feature	Function
1	6 Configurable Button Switches	Function is programmed by the K-Config Configuration software
2	LCD Label	Displays up to 8 characters at once (set by the K-Config configuration software)
3	4 Configurable Button Switches	Function is programmed by the K-Config Configuration software
4	LCD Label	Displays up to 8 characters at once (set by the K-Config configuration software)
5	2 Configurable Button Switches	Function is programmed by the K-Config Configuration software
6	LCD Label	Displays up to 8 characters at once (set by the K-Config configuration software)
7	Rotary switch up/down LED indicator	Indicates the direction of travel of the rotary switch
	VOLUME Rotary Switch	Function is programmed by the K-Config Configuration software

Figure 2 and Table 2 define the rear panel of the **RC-74DL**.

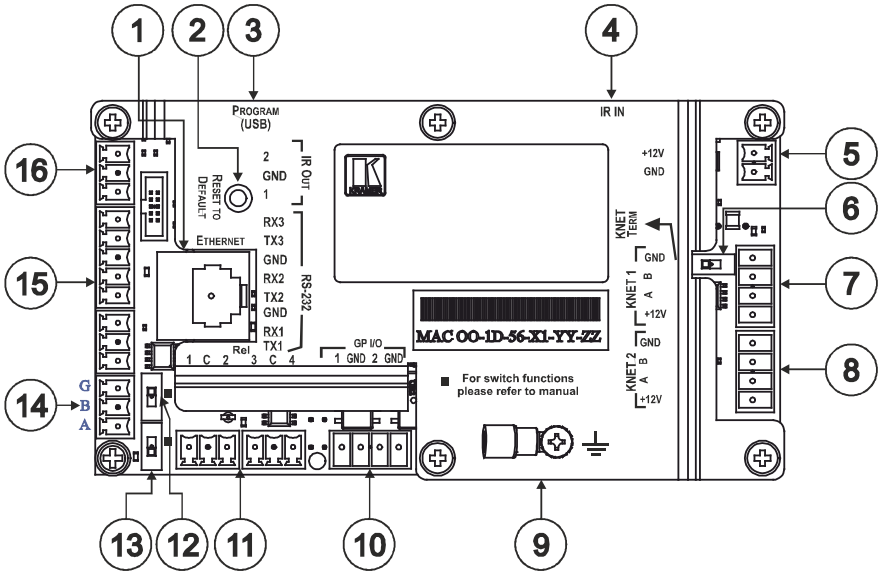


Figure 2: RC-74DL Master Room Controller Rear Panel

Table 2: RC-74DL Master Room Controller Rear Panel Features

#	Feature	Function	
1	*ETHERNET* RJ-45 Connector	Connects to the PC or other serial controller through computer LAN	
2	*RESET TO DEFAULT*[1] Button	**Caution:** The current LCD text and all button actions will be erased Push to erase Push[2] to erase all custom programming and reset to the factory default definitions[3]:	
		IP Address:	192.168.1.39
		Mask:	255.255.0.0
		Gateway:	0.0.0.0
3	*PROGRAM (USB)* Connector	Connect to a computer for firmware upgrade or for uploading the configuration file	
4	*IR IN* built-in IR receiver	Use to learn the IR commands from a machine's remote control transmitter	
5	Power Supply 2-pin Terminal Block Connector	Connect to power supply (see Section 5.1). Connect GND to GND, +12V to +12V	
6	*K-NET TERM* Switch[4]	Slide to the left (in the direction of the arrow) for K-NET termination, slide to the right up to leave bus unterminated	
7	*K-NET1* Connector	Connect the GND pin to the Ground connection[5]; pin B (-) and pin A (+) are for RS-485, and the +12V pin is for powering the unit	
8	*K-NET2* Connector	Connect the GND pin to the Ground connection[5]; pin B (-) and pin A (+) are for RS-485, and the +12V pin is for powering the unit	
9	Ring Tongue Terminal Grounding Screw	Connect to grounding wire (optional), (see Section 6)	
10	*GP I/O* Terminal Block*s* (1 and 2)	Connect to various sensors, switches, LEDs, or relays	
11	*Rel* (Relay) Terminal Blocks	Connect to low-voltage relay-driven devices (from 1 to 4)	
12	Switch	For internal factory use only	
13	RS-485 Termination Switch	Slide down for RS-485 termination[6] with 120Ω; slide up for no RS-485 Line Termination	
14	*RS-485* Terminal Block Connector	Connect to the RS-485 detachable terminal block on a switcher or PC	
15	*RS-232* Terminal Blocks	Connect to the RS-232 devices (from 1 to 3)	
16	*IR* Output Terminal Blocks	Connect to IR emitter cables (from 1 to 2)	

1 This operation should be carried out by authorized Kramer technical personnel or by an external system integrator, and requires removal of the device from the wall by unscrewing the four wall mount screws

2 Using a small screwdriver

3 Disconnect the power and then connect it while pressing the Factory Reset button. The unit will power up and load its memory with the factory default definitions

4 The last physical device on a K-NET bus must be terminated

5 The ground connection is sometimes connected to the shield of the RS-485 cable (in most applications, it is not connected)

6 The first and the last units on the RS-485 line should be terminated (ON). Other units should be unterminated (OFF)

5 Connecting the RC-74DL Master Room Controller

To connect[1] the **RC-74DL**, as shown in the example in Figure 3, do the following:

1. Connect the IR outputs as follows:
   - Connect an IR emitter to IR OUTPUT 1 and attach the emitter to the DVD player
   - Connect an IR emitter to IR OUTPUT 2 and attach the emitter to the power amplifier
2. Connect the RS-232 ports (see Section 6) as follows:
   - Connect RS-232 port 1 to the projector
   - Connect RS-232 port 3 to the plasma display
3. Connect the RELAY terminal block connectors as follows:
   - Connect RELAY 1 and 2 to the screen
   - Connect RELAY 3 and 4 to the lighting system
4. Connect the GPI/O 1 port to a motion detector.
5. Connect the Ethernet port to a network (not shown in Figure 3).
6. Connect the K-NET port to any **RC** device with K-NET (for example, the **RC-63DL**).

1 Switch off the power on each device before connecting it to your RC-74DL. After connecting your RC-74DL, switch on its power and then switch on the power to each device

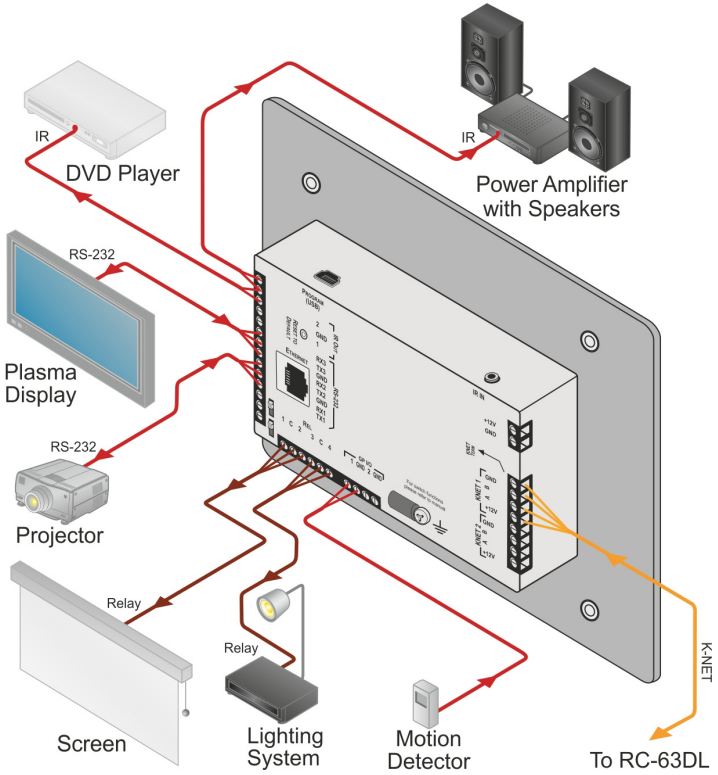


Figure 3: Connecting the RC-74DL Master Room Controller

5.1 Connecting the RS-232 Interface

To connect an AV device to the **RC-74DL** using the RS-232 port, connect the RS-232 9-pin D-sub port on your AV device to the RS-232 terminal block on the rear panel of the **RC-74DL** as shown in Figure 4.

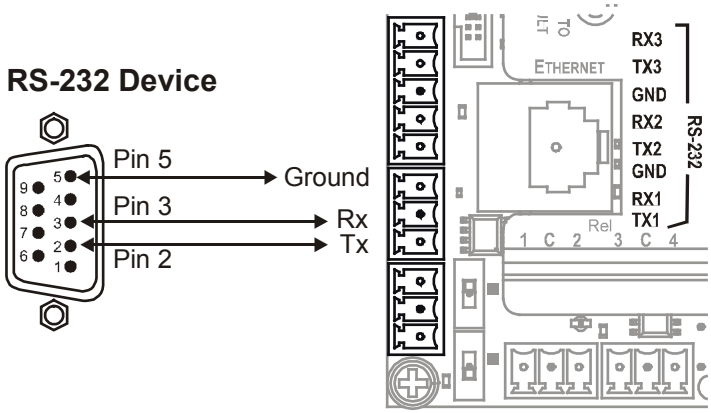


Figure 4: RS-232 Connection

5.2 Connecting the Ethernet Port

The Ethernet connection of the **RC-74DL** lets you perform all control functions of the **RC-74DL** over the Internet using a PC running the Kramer Site-CTRL control program.

To connect the **RC-74DL** to a network:

1. Connect the Ethernet port of the **RC-74DL** to the Ethernet port on a network hub or network router, via a straight cable with RJ-45 connectors.
2. At the other end, connect the Internet to a PC running **Site-CTRL**.
3. After connecting the Ethernet port, you have to install and configure it. For detailed instructions on how to install and configure your Ethernet port, see the *K-Config Software Guide* available from our Web site[1].

1 At http://www.kramerelectronics.com

6 Grounding the RC-74DL Master Room Controller

The grounding screw is used to earth the chassis of the unit to the building ground preventing static electricity from impacting the performance of the unit.

Figure 5 and Table 3 defines the grounding screw components.

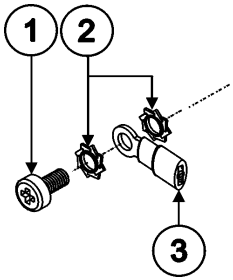


Figure 5: Grounding Connection Components

Table 3: Grounding Component Descriptions

#	Component Description
1	M3X6 screw
2	1/8" Toothed Lock Washer
3	M3 Ring Tongue Terminal

To ground the **RC-74DL**:

1. Connect the Ring Tongue terminal to the building grounding point wire (it is recommended to use a green-yellow AWG#18 (0.82mm^2) wire, crimped with a proper hand-tool).
2. Insert the M3x6 screw through the toothed lock washers and the tongue terminal in the order shown above.
3. Insert the M3x6 screw (with the two toothed lock washers and ring tongue terminal) into the grounding screw hole and tighten the screw.

7 Operating the RC-74DL Master Room Controller

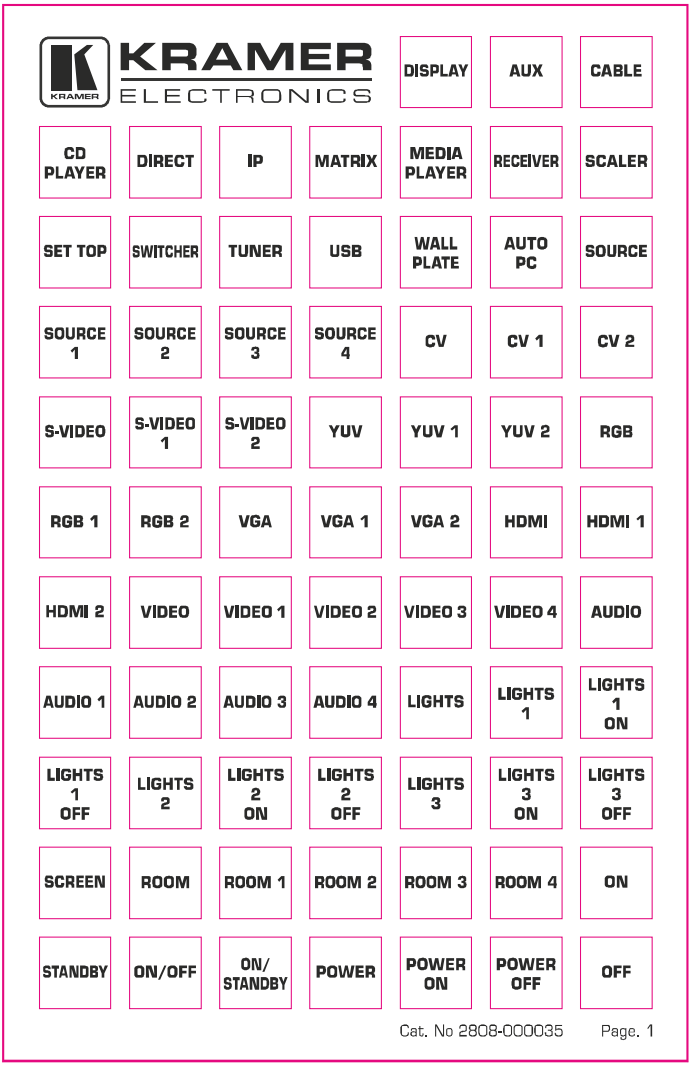
You can operate your **RC-74DL** using:

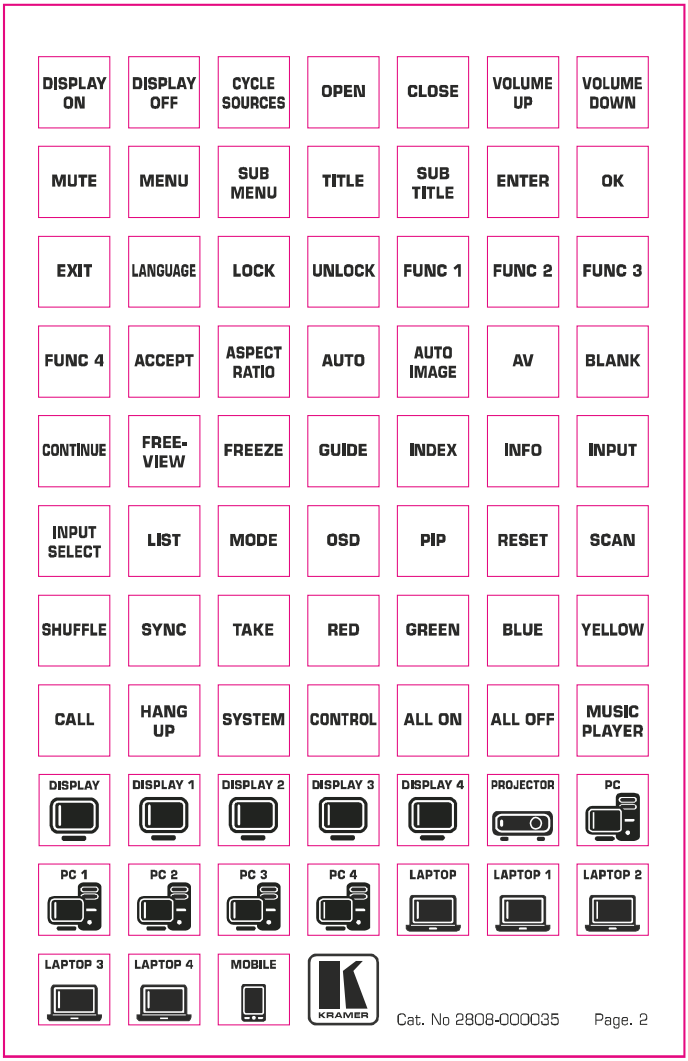
- Front panel buttons. These are configured using the **K-Config** software. For instructions on using the software, see the *K-Config Software Guide* available from our Web site[1]
- A PC running **Site-CTRL** control software:
  To operate your device using **Site-CTRL**, see the *Site-CTRL User Guide* available at the Kramer Web site

1 www.kramerelectronics.com

8 Front Panel Button Caps and Labels

The **RC-74DL** is supplied with a button label sheet and 12 clear, button caps to house the labels. Figure 6 illustrates a sample button label sheet.




DISPLAY ON
DISPLAY OFF
CYCLE SOURCES
OPEN
CLOSE
VOLUME UP
VOLUME DOWN
MUTE
MENU
SUB MENU
TITLE
SUB TITLE
ENTER
OK
EXIT
LANGUAGE
LOCK
UNLOCK
FUNC 1
FUNC 2
FUNC 3
FUNC 4
ACCEPT
ASPECT RATIO
AUTO
AUTO IMAGE
AV
BLANK
CONTINUE
FREE-VIEW
FREEZE
GUIDE
INDEX
INFO
INPUT
INPUT SELECT
LIST
MODE
OSD
PIP
RESET
SCAN
SHUFFLE
SYNC
TAKE
RED
GREEN
BLUE
YELLOW
CALL
HANG UP
SYSTEM
CONTROL
ALL ON
ALL OFF
MUSIC PLAYER
DISPLAY
DISPLAY 1
DISPLAY 2
DISPLAY 3
DISPLAY 4
PROJECTOR
PC
PC 1
PC 2
PC 3
PC 4
LAPTOP
LAPTOP 1
LAPTOP 2
LAPTOP 3
LAPTOP 4
MOBILE
KRAMER
Cat. No 2808-000035
Page. 2

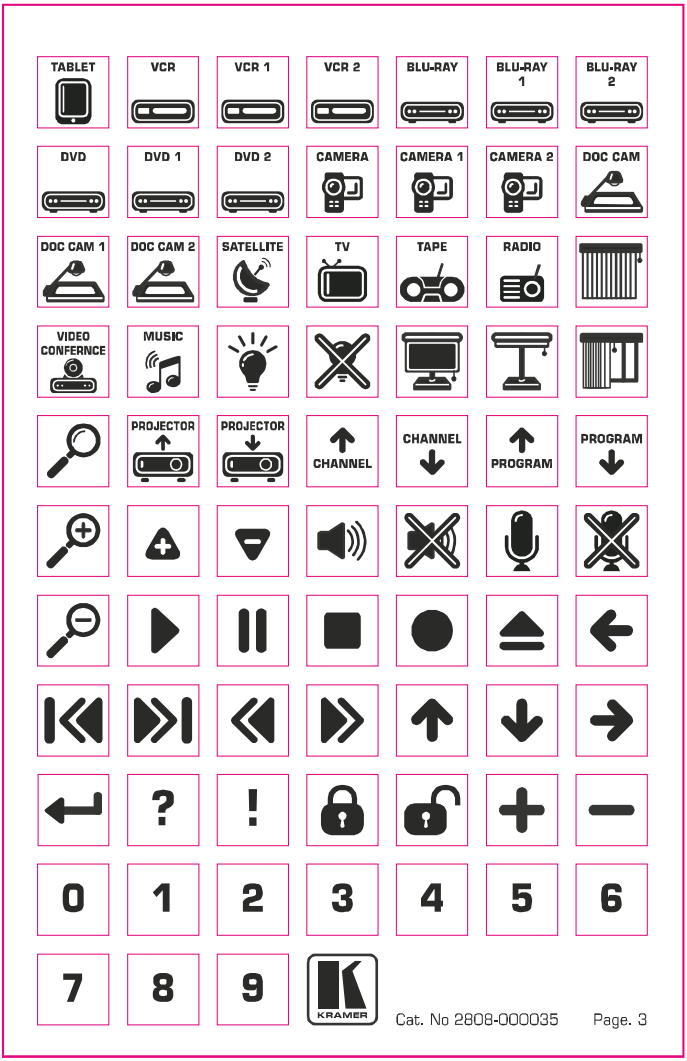


Figure 6: Sample Button Label Sheet

8.1 Installing the Front Panel Button Caps, Labels

To install the button caps and labels:

1. Remove the required labels from the supplied button label sheet.
2. Hold the button cap so that it is oriented as shown in Figure 7 with the "wings" on the left and right sides.

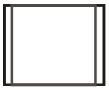


Figure 7: Button Cap Orientation

3. Insert the label inside the cap.

Figure 8: Button Cap Orientation with Label

4. Retaining the orientation, place the button cap on the buttons of the **RC-74DL**.

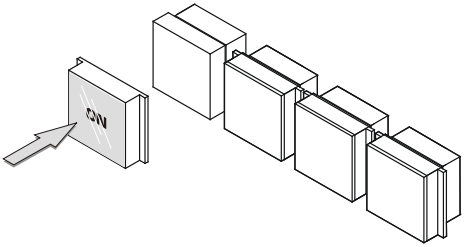


Figure 9: Placing the Button Cap

5. Repeat for all caps.
6. Remove the protective foils from both sides of the Perspex (acrylic glass) windows.
7. Place the faceplate on the **RC-74DL** so that the four screw mounting holes are aligned.
8. Insert the four mounting screws and tighten with a screwdriver.
9. Install the volume control knob.

9 Technical Specifications

The **RC-74DL** technical specifications[1] are shown in Table 4.

Table 4: RC-74DL Master Room Controller Technical Specifications

INPUTS:	3 RS-232, 1 RS-485, 2 GPI/O and 2 K-NET on terminal block connectors; Ethernet on an RJ-45 connector; 1 infrared sensor, 1 USB for programming
OUTPUTS:	2 IR, 4 relays (36V AC or DC, 2A, 60VAC maximum on non-inductive load) and 2 GPI/O on terminal block connectors
DEFAULT IP SETTINGS:	IP number – 192.168.1.39; Mask – 255.255.0.0; Gateway – 0.0.0.0
POWER SOURCE:	12V DC, 470mA
DIMENSIONS:	16.2cm x 2.6cm x 11.4 (6.4" x 1.0" x 4.5") W, D, H
WEIGHT:	0.6kg (1.4lbs) approx.
ACCESSORIES:	Power supply, Kramer K-Config Windows®-based configuration software
OPTIONS:	IR emitter cables, KPOD-301, OWB-3G

1 Specifications are subject to change without notice

LIMITED WARRANTY

We warrant this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by us or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

* FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors, visit our Web site www.kramerelectronics.com
where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

PN: 2900-000691 Rev: 2

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000691 REV 2